

RELATIONSHIP BETWEEN FIXED ORTHODONTIC TREATMENT AND WEIGHT LOSS – A SURVEY

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ABSTRACT:

INTRODUCTION - Fixed orthodontic treatment has a potential impact on patient's life which leads to changes and restrictions in their dietary habits which is causing difficulty in consuming hard foods in which the masticatory ability of the patient is depleted. The current study aims to assess the relationship between fixed orthodontic treatment and weight loss. **MATERIALS AND METHODS:** the survey was conducted for patients undergoing orthodontic treatment, which included 10 questions. The total study participants were 100 in number, which included both males of 39 and females of 61. **RESULTS:** The results showed that 58% of the patients had weight loss after the orthodontic treatment. Among the patients who reported of weight loss 51% had a weight loss of about 1-2kg and about 19% had weight loss of about 2-3 kg. **CONCLUSION:** The above study confirms that changes in dietary patterns, reduction in the quantity of food intake and weight are recognised among patients undergoing fixed orthodontic therapy.

Keywords - fixed orthodontic treatment, dietary habits, weight loss.

INTRODUCTION:

Fixed orthodontic treatment has a potential impact on patient's routine life which leads to changes and restrictions in their dietary habits [1]. This is because consuming hard foods may be difficult due to which the masticatory ability of the patient is depleted [2]. Patients seeking orthodontic treatment tend to usually improve their facial or dental aesthetics [3]. Patients have a greater perception of aesthetics which had increased demand for orthodontic treatment [4]. However, orthodontic treatment can be a quite uncomfortable experience and may cause pain especially at the initial stage of the treatment [5]. Several factors were found to be associated with the discomfort accompanying orthodontic appliances; such factors include the type of appliance used, amount of force applied, previous experience of pain, emotional changes and the cognitive and environmental aspects [9]. In order to reduce pain and discomfort, patients usually follow soft diet and tend to decrease their daily dietary intake. Various studies have stated that, there is a marked reduction in weight, BMI (body mass index) and BMF (bone marrow fat) after the orthodontic appliance therapy [6]. The relationship between the oral health status and dietary intake is well documented in the literature. It is known that orthodontic treatment induces a physical, psychological and emotional stress that reduces nutrient utilization; hence requiring the increase of the individual dietary intake [3]. Limited food intake or consuming only soft diet will result in decrease of body weight and thus loss of body fat [6].

In orthodontics, many studies have suggested that pain and discomfort during the treatment affected their life. Most of the investigators have found that oral health status and quality of life are negatively affected.

Very few studies have evaluated the effect of fixed orthodontic appliance on weight. Thus, the aim of the current study was to assess the relationship between fixed orthodontic treatment and weight loss.

MATERIALS AND METHODS:

The survey was conducted in a questionnaire method to patients undergoing orthodontic treatment in the department of orthodontics, Asan Memorial dental college and hospital, Chengalpattu.

The inclusive and exclusive criteria are as follows:

INCLUSION CRITERIA:

1. 18 -30 years old patients
2. Patients undergoing fixed orthodontic treatment
3. Both male and female

EXCLUSION CRITERIA:

1. Patients below 18 years of age
2. Patients wearing removable and functional appliance
3. Patients having systemic diseases

STUDY PARTICIPANTS AND DATA COLLECTION:

The survey includes 10 questions which were asked to the patients during their routine review visit. Before the start of the survey, the questionnaire had been given to 5 participants to assess the reliable understandability of the questions. The total study participants were 100 in number, which included both male of 39 and female of 61 undergoing fixed orthodontic treatment.

The questions were related to their dietary intake, discomfort, and amount of weight loss, aesthetic appearance and health issues caused due to orthodontic treatment. Based on this method, the survey was conducted on 100 patients.

STATISTICAL ANALYSIS:

The data obtained from the patients was entered to Microsoft excel. The data was then imported to statistical package of social sciences (SPSS) software version 27 for statistical analysis. Hypothesis test was used, frequency and percentage for each questionnaire was determined.

TABLE 1 shows the percentage of duration of patients undergoing orthodontic treatment over a survey for 100 patients

How long is your treatment going on?					
		Freque ncy	Percent	Valid Percent	Cumulative Percent
Valid	1 year	57	57.0	57.0	57.0
	2 years	30	30.0	30.0	87.0

	more than 2 years	13	13.0	13.0	100.0
	Total	100	100.0	100.0	

TABLE 2 shows the percentage of patients’ fear of breaking their brackets during mastication. The result shows that about 51% of the patients had fear and other half of the patients didn’t care about breakage of brackets

Do you have fear of breaking your bracket while eating?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	51	51.0	51.0	51.0
	No	45	45.0	45.0	96.0
	sometimes	4	4.0	4.0	100.0
	Total	100	100.0	100.0	

TABLE 3 shows percentage of patients’ amount of weight reduced due to orthodontic treatment; out of which most patients had weight loss about 1-2kg and very few patients had weight loss more than 3kg

How much kilograms do you think you have reduced?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 kg	51	51.0	51.0	51.0
	2-3 kg	19	19.0	19.0	70.0
	more than 5 kg	5	5.0	5.0	75.0
	no weight loss	25	25.0	25.0	100.0
	Total	100	100.0	100.0	

TABLE 4 shows that percentage of the patient’s discomfort due to orthodontic brackets, percentage of them who made changes in their diet plan and amount of limitation of food after the start of orthodontic treatment

Have you have lost weight after wearing orthodontic brackets?	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	58	58.0	58.0	58.0
No	42	42.0	42.0	100.0
Total	100	100.0	100.0	
Has weight loss due to orthodontic appliances caused you any health issue?	4	4.0	4.0	4.0
	96	96.0	96.0	100.0
	100	100.0	100.0	
Has your weight loss affected your aesthetic appearance?	17	17.0	17.0	17.0
	83	83.0	83.0	100.0
	100	100.0	100.0	

TABLE 5 shows the percentage of patients’ amount of weight loss, health issues and aesthetic appearance affected due to orthodontic treatment and discomfort caused due to brackets

RESULTS:

The results of the present study have been displayed in the tabular column.

Is your orthodontic bracket causing you discomfort in your dietary habits?	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Yes	56	56.0	56.0	56.0
No	44	44.0	44.0	100.0
Total	100	100.0	100.0	
Have you made changes in your diet plan because of orthodontic treatment?	59	59.0	59.0	59.0
	41	41.0	41.0	100.0
	100	100.0	100.0	
Have you limited your amount of food intake because of orthodontic brackets?	50	50.0	50.0	50.0
	50	50.0	50.0	100.0
	100	100.0	100.0	
Have you avoided your favourite non-veg food after start of orthodontic treatment?	55	55.0	55.0	55.0
	45	45.0	45.0	100.0
	100	100.0	100.0	

The table 1 shows that, Out of 100 patients taken into the survey, 57% of patients had been undergoing orthodontic treatment for 1 year, 30% of patients had been undergoing for 2 years and 13% of patients for more than 2 years.

Upon asking the patients about the discomfort caused due to orthodontic brackets, table 4 shows that 56% of the patients had discomfort in their dietary habits due to the orthodontic brackets and 59% of them made changes in dietary plan due to the discomfort.

In table 2, it showed that 51% percentage of patients had fear of breaking their brackets during mastication, while 45% of them had no fear and only 4% of the patients had fear sometimes.

In table 3, the results show that 58% of the patients had weight loss after the start of the orthodontic treatment, among them 51% of them had 1-2 kg of weight loss while 19% of them had 2-3kg weight loss.

According to table 4, it shows that 50% of the patients had limited the amount of food intake due to orthodontic brackets and 50% of them didn’t, while 55% of the patients had avoided non-veg or hard foods and 45% of them didn’t.

On further study about the medical conditions caused due to weight loss and their aesthetic appearance, table 5 shows that 96% of them had no health issues and 83% of the patients had not been affected for their aesthetic appearance due to weight loss.

So, the present study shows the result of 58% of the patients undergoing orthodontic treatment had weight loss about 1 – 2 kg and 19% of them had about 2-3kg weight loss.

DISCUSSION:

Treatment time with fixed orthodontic appliance is subjected to considerable variation and highly dependent on the type of malocclusion, complexity and treatment approach used. Common complaints like pain, discomfort, ulceration, tongue soreness and functional limitations have occurred during the treatment period, which lead to weight loss.

In a study done by Vikas et al. where he states that pain, discomfort and changes in dietary pattern during orthodontic treatment will lead to loss or attain in weight but the result of the present study suggested that majority of orthodontic patients reported of weight loss after commence of fixed therapy.

In a study done by Feres et al. where he states, orthodontic patients reported difficulty in mastication due to the amount of pain and discomfort experienced by the brackets, similar result were found in the above study. About 53% of patients experienced pain due to brackets in the oral cavity, more than 50 % patients reported of change in dietary habits, reduction in quantity of food intake and patient also avoided nonvegetarian food as well as their favorite food and this was practiced because of their fear in the breakage of brackets during mastication.

One of the most commonly stated reasons for dietary change was influence of dietary instruction given by orthodontists, among the main instruction given to avoid hard and high sugar content foods.

In the observational study done by Nancy ajwe et al. [1] where she stated that, there was 2 to 3 kilograms of weight loss seen among orthodontic patients during the initial stage of treatment. Equivalent results were presented in the above study, more than 50 % of patients reported weight loss after the commence of orthodontic treatment, out of which 6% reported weight loss more than 5kg and 52% reported 1 to 2 kg weight loss.

According to vikas et al, as fixed orthodontic appliance therapy continues for 2– 3 years it can be considered as an excellent accessory and present study planned to pursue weight loss. Feras et al from his study reported that patients have changed their eating habits which were healthier compared with pre- treatment and consuming fewer snacks, eating healthier foods and avoiding high sugar content foods.

The above study also reveals that 83 to 96 % of patients experienced that brackets do not influence their aesthetics and health.

LIMITATIONS OF STUDY:

Large sample size involving multiple weight measurement in pre -determined time gap will help in better assessment of weight change of individual undergoing fixed therapy.

CONCLUSION:

The above survey confirms that changes in dietary plan, reduction in quantity of food intake and weight loss is recognized among patient undergoing fixed orthodontic therapy; it also suggested that fixed appliance doesn't affect the patient health and aesthetics.

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